LESSONS LEARNT FROM THE SAMOA TSUNAMI 2009 – A MULTI-DISCIPLINARY SURVEY

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At 6:48 a.m. local American Samoan time on the 29th September 2009 a shallow earthquake (18km depth) of moment magnitude MW 8.1 occurred approximately 190 km south of Samoa. It generated a tsunami that caused damage and casualties in the South Pacific nations of American Samoa, Samoa and Tonga. 243 people died in this event. The earthquake was felt widely throughout the three countries affected but earthquake shaking did not cause significant damage; therefore, damage and casualties were almost entirely due to the following tsunami.

Within hours NIWA and GNS scientists began to organise a field survey in the affected countries. The NIWA / GNS team spend nearly two weeks in the field to gathering a wide range of information with the aim helping New Zealand become more prepared for the threat of a tsunami. Field activities undertaken included:

- Measurement of topographic profiles and water (inundation) depths along the profiles using GPS surveying equipment
- Observation and recording of levels of damage to buildings for various tsunami inundation depths, and
- Collection of data on the course of the event and the socio-economic impacts.

In Samoa the NIWA / GNS team also joined the multi-disciplinary UNESCO-IOC International Tsunami Survey Team Samoa (ITST Samoa) to undertake a more holistic approach to the post-tsunami survey. The ITST Samoa teams focused on: a) documenting the impact of the tsunami upon the built environment, socio-economic landscape, ecosystems and biodiversity; b) articulating the changing geological, geophysical, and bathymetric landscape; and c) providing an analysis of the success of past and present national and international disaster risk reduction programmes.

The overarching purpose of the ITST was to work as teams, to integrate local counterparts within the international teams, to share data and ultimately provide the Government of Samoa with recommendations regarding the recovery phase.

The New Zealand team played a leading role in this mission. We also broke new ground in post disaster loss assessment research. We initiated a scoping study to find ephemeral empirical evidence of indirect and intangible loss indicators during the emergency phase. Our focus was on short term quality of life issues (i.e. livelihoods affected and income loss) to long term quality of life losses (e.g. economic marginalisation, loss of items of cultural significance, stress induced ill health and mortality, etc).

The lessons learned from this event will help New Zealand to become more resilient to tsunami. The information collected in the post-tsunami survey will also be feed into RiskScape to improve and refine the impact assessment tool. This paper will give an overview of the findings of this comprehensive survey and address some of the lessons learnt for New Zealand.